

1     Claims

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3     1.    An implantable replacement joint comprising a  
4     first component for attachment to a first bone  
5     portion; a second component for attachment to a  
6     second bone portion; and a flexible component  
7     extending between the first and second components;  
8     wherein each of the first and second components has  
9     a respective bore and the flexible component is  
10    received within a cavity formed by the bores of the  
11    first and second components; and wherein the  
12    flexible component is freely-floating within the  
13    cavity.

14

15    2.    A replacement joint as claimed in claim 1,  
16    wherein the first and second bone components are  
17    adapted to engage first and second bone portions  
18    located on opposite sides of a joint.

19

20    3.    A replacement joint as claimed in claim 1 or  
21    claim 2, adapted to replace a joint selected from  
22    the group consisting of wrists, fingers, toes, knees  
23    and elbows.

24

25    4.    A replacement joint as claimed in any preceding  
26    claim, wherein the first and second components are  
27    adapted to be anchored within cavities in the  
28    respective first and second bone portions.

29

30    5.    A replacement joint as claimed in claim 4,  
31    wherein the first and second components are shaped  
32    to be an interference fit within the respective

1 first and second bone portions.

2

3 6. A replacement joint as claimed in claim 4 or  
4 claim 5, wherein the first and second components  
5 have formations on their outer surfaces to engage  
6 the inner surfaces of the cavities in the first and  
7 second bone portions.

8

9 7. A replacement joint as claimed in claim 6,  
10 wherein the formations on the outer surfaces of the  
11 first and second portions are screw threads, annular  
12 or semi-annular ridges or expansion fins.

13

14 8. A replacement joint as claimed in any preceding  
15 claim, wherein the cavity formed by the bores in the  
16 first and second components is longer than the  
17 flexible component so that the flexible member can  
18 move axially within the cavity.

19

20 9. A replacement joint as claimed in any preceding  
21 claim, wherein the cavity formed by the bores in the  
22 first and second components is wider than the  
23 flexible component so that the flexible component  
24 can move laterally within the cavity.

25

26 10. A replacement joint as claimed in any preceding  
27 claim, wherein the first and second components have  
28 bearing surfaces that articulate against one another  
29 when the device is made up.

30

31 11. A replacement joint as claimed in claim 10,  
32 wherein the flexible component and the bores in the

1 first and second components extend through the  
2 bearing surfaces.

3

4 12. A replacement joint as claimed in claim 10 or  
5 claim 11, wherein the bearing surfaces are arcuate  
6 to promote pivotal movements of the first and second  
7 components relative to one another.

8

9 13. A replacement joint as claimed in claim 12,  
10 wherein the bearing surface of the first component  
11 is convex along a first axis and the bearing surface  
12 of the second component is convex along a second  
13 axis, the first and second axes being mutually  
14 perpendicular.

15

16 14. A replacement joint as claimed in any preceding  
17 claim, wherein the first component is pivotable  
18 relative to the second component around at least one  
19 axis.

20

21 15. A replacement joint as claimed in claim 14,  
22 wherein the at least one pivot axis is movable  
23 relative to the replacement joint.

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25 16. A replacement joint as claimed in any preceding  
26 claim, wherein the first component is pivotable  
27 relative to the second component around more than  
28 one axis.

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30 17. A replacement joint as claimed in claim 16,  
31 wherein the first and second components are  
32 pivotable relative to each other around two

1 perpendicular axes.

2

3 18. A replacement joint as claimed in any preceding  
4 claim, wherein the first and second components are  
5 made from a relatively harder material than the  
6 flexible member.

7

8 19. A replacement joint as claimed in any preceding  
9 claim, wherein the first and second components are  
10 made from a material selected from the group  
11 comprising stainless steel, metal alloys, plastics  
12 materials, ceramics and carbon fibre composites.

13

14 20. A replacement joint as claimed in any preceding  
15 claim, wherein the flexible component is resilient.

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17 21. A replacement joint as claimed in any preceding  
18 claim, wherein the flexible component comprises a  
19 material having inherent flexibility.

20

21 22. A replacement joint as claimed in claim 21,  
22 wherein the flexible component is made from silicone  
23 or polyurethane.

24

25 23. A replacement joint as claimed in any preceding  
26 claim, wherein the flexible portion has a hinge.

27

28 24. A replacement joint as claimed in any preceding  
29 claim, wherein a bearing plate is provided between  
30 the bearing surfaces of the first and second  
31 components.

32

1 25. A replacement joint as claimed in claim 24,  
2 wherein the bearing plate is formed of metal or  
3 ceramics.

4  
5 26. A replacement joint as claimed in claim 24 or  
6 claim 25, wherein the bearing plate is of a  
7 different material from the first and second  
8 components.

9  
10 27. A replacement joint as claimed in any of claims  
11 24 to 26, wherein the bearing plate has arcuate  
12 surfaces.

13  
14 28. A replacement joint as claimed in any of claims  
15 24 to 27, wherein the bearing plate has two pivot  
16 points, and the first and second components are  
17 adapted to pivot on opposite faces of the bearing  
18 plate.

19  
20 29. A replacement joint as claimed in any of claims  
21 24 to 28, wherein the bearing plate has extensions  
22 that limit the movement of at least one of the first  
23 component and the second component relative to the  
24 bearing plate.

25  
26 30. A replacement joint as claimed in any preceding  
27 claim, wherein the clearance between the flexible  
28 component and the bores in the first and second  
29 components increases towards the mouths of the  
30 bores.

31  
32 31. A replacement joint as claimed in any preceding

1 claim, wherein the flexible component is free to  
2 move axially, laterally and rotationally within the  
3 cavity formed by the bores of the first and second  
4 components.

5  
6 32. A replacement joint as claimed in any preceding  
7 claim, wherein the spacing between the bores of the  
8 first and second components and the flexible  
9 component is smaller around the ends of the flexible  
10 component than the corresponding spacing between the  
11 bore mouths and the middle of the flexible  
12 component.

13  
14 33. A replacement joint as claimed in claim 32,  
15 wherein the bores of the first and second components  
16 flare outwardly towards the bore mouths.